

Remarks

Citations to the specification are applied according to the paragraph numbering of the Application
Publication No.: US2006/0077098.

The Examiner objected to figures 1, 2a and 2b. Replacement figure sheets, now including the element notations identified by the Examiner are attached. No new matter has been added.

The Examiner objected to the disclosure. The sentence identified by the Examiner has been amended to more clearly define the structure described. No new matter has been added.

The Examiner rejected claims 1-2, 4-20, 22, 25 and 28-29 under 35 U.S.C. 103(a) as unpatentable by *Gottl* in view of *Phillips*. Independent claim 1 has been amended to include the limitations of dependent claim 4 as originally filed. Claim 5 has been placed into independent form (including all the limitations of claim 1 as originally filed). Claim 8 has been amended into independent form (including all the limitations of claims 1 and 10 as originally filed). 37 CFR 1.16(h) fees, large entity, in the total amount of \$400 are submitted with this response via EFS-Web to reflect the increase in the application of the total number of independent claims by two independent claims.

Applicant respectfully submits that the Examiner has failed to fully appreciate the claim 4 limitations (now incorporated into claim 1) wherein the wiper 16 is coupled about the arcurate edge guide surface 69 of the main PCB 13 by a clip 71 operative to bias the wiper 16 against the main PCB 13 (Specification Paragraph 46). This feature of the invention, shown for example in the exemplary embodiment of figure 5, provides a reliable electrical connection, between a wiper coupled at both the first wiper junction and via the clip to reduce the necessary structural characteristics of the wiper materials and or dimensions, improving both the electrical characteristics of the invention and the overall cost efficiency of the resulting variable phase

shifter. It appears the Examiner has mis-understood the plain and explicit differences between an arcuate edge guide surface 69 of the main PCB 13 and the curved shape of the striplines 21 (*Gottl*) or conductive traces 120 (*Phillips*) appearing in cited the prior art. The elements identified by the Examiner are the electrical connections/pathways, the claimed element is a structural characteristic and coupling point of the main PCB having no electrical function whatsoever.

With respect to claim 4 as originally filed, the Examiner indicated that the center tap 29 of *Gottl* provides the mechanical fixing both for the center tap and for the tapping points to the arcuate traces. A phase shifter utilizing supported metallic striplines, *Gottl* has no printed circuit board. A base plate 36 of *Gottl* is demonstrated as having a square edges in each of the embodiments disclosed. Therefore, *Gottl* has no *arcuate edge* guide surface 69 of a main PCB, whatsoever. Further, the center tap 29 of *Gottl*, a pin connection about which the wiper rotates, cannot be characterized as a clip which couples the wiper to the main PCB, *about the arcuate edge guide surface*. Because the cited references fail to teach, disclose or suggest a clip coupled to the wiper to bias the wiper against the main PCB about an arcuate edge guide surface of the main PCB, rejection of claim 1 as amended and the dependent claims 2-3, 6-7, 14-15, 22, 28 and 29 thereof is improper.

Applicant respectfully submits that the Examiner has failed to fully appreciate the claim 5 limitations, now amended into independent form incorporating the limitations of original independent claim 1, wherein the wiper 16 is coupled at both the wiper junction 30 and via a fastener 83 extending through the arcuate guide slot 81 of the main PCB 13 (Specification Paragraph 47). This feature of the invention, best shown in Figure 2b, reduces the necessary structural characteristics of the wiper materials and or dimensions, improving both the electrical characteristics of the invention and the overall cost efficiency of the resulting variable phase shifter.

With respect to claim 5, the Examiner identifies an interconnection via secondary apertures 1020 between the coupling arm 200 and the key 210 of *Phillips* to satisfy the claim 5 limitations. The coupling the Examiner has identified is between the "wiper" 200 and an additional reinforcing element that keys the "wiper" 200 to the rotating shaft 245 (at the first wiper junction). There is no fastener extending through a guide slot of the main PCB *having an arc center proximate the first wiper junction in the main PCB* of *Phillips* whatsoever. Because the cited references fail to teach, disclose or suggest a wiper 16 coupled at both the wiper junction 30 and via a fastener 83 extending through the arcurate guide slot 81 of the main PCB 13, rejection of claim 5 as amended is improper.

Claim 8 has been amended into independent form, further including the limitations of claim 10 as originally filed with the further clarification that the first and second clips of the stacked phase shifters are positioned at a spaced apart location from the first wiper junction, coupled together by a linkage pin.

In support of the rejection of claim 8, the Examiner identifies *Phillips* figure 13. *Phillips* figure 13 shows a stacked arrangement of two phase shifter assemblies linked only via the single central "first wiper junction". Bias of the separate wipers against each main PCB is via the washers 2 and 210, respectively. The wipers are coupled together only by registration with the first wiper junction 245, via the washers 2 and 210, only. There is no first and second clip, spaced apart from the first wiper junction, the first and second clips coupled by a linkage pin, whatsoever. Rather than disclosing or suggesting the present invention, *Phillips* demonstrates the additional elements and significant structure necessary in the prior art that the offset clip arrangements of the present invention eliminates. Because the cited references fail to disclose, teach or suggest first and second clips of respective stacked phase shifters positioned at a spaced apart location from the first wiper junction, the first and second clips coupled together by a linkage pin, rejection of claim 8 and the dependent claims 11-13 is improper.

Further with respect to claim 11, the Examiner again references *Phillips* figure 13. In figure 13, both of the "main PCB" 140a and 140b plainly show a trace side facing *away* from each respective "baseplate" 610a and 610b. No disclosure, teaching or suggestion of alternative orientations appears in the cited reference. Because this orientation is contrary to the specifically claimed orientation of each of the trace sides facing the baseplate, rejection of claim 11 is improper.

Further with respect to claim 12, the Examiner again references *Phillips* figure 13. In figure 13, both of the "main PCB" 140a and 140b plainly show a trace side of each facing in the same "upward" direction. No disclosure, teaching or suggestion of alternative orientations appears in the cited reference. Because this orientation is contrary to the specifically claimed orientation of each of the trace sides facing away from each other, that is one facing "up" and one facing "down", rejection of claim 12 is improper.

Further with respect to claim 13, the Examiner again fails to identify the claimed elements of an arcuate edge guide surface of the main PCB and a clip coupled to the wiper to bias the wiper against the first main PCB, about the arcuate edge guide surface as described in detail with respect to claim 1, herein above. *Gotti* has no arcuate guide surface and *Phillips* couples the wiper to the main PCB only via the rotating shaft 245. Because the cited references fail to disclose, teach or suggest an arcuate edge guide surface of the main PCB and a clip coupled to the wiper to bias the wiper against the first main PCB, about the arcuate edge guide surface, rejection of claim 13 is improper.

Further with respect to claim 15, the Examiner appears to take the position that the aperture in the coupling arm 200 through which the shaft 245 passes may be interpreted as the claim element of a linkage slot formed in a distal end of the wiper pcb. As disclosed, the linkage slot 97

is at the distal end (Specification Paragraph 51, figure 2b). "Distal" is defined by Webster as "situated away from the point of attachment or origin or a central point especially of the body". The Examiner has identified the single central attachment point attaching the coupling arm to the phase shifter via the shaft 245. Therefore, this cannot be characterized as being a linkage slot at the *distal* end of the wiper. Because the cited references fail to disclose, teach or suggest a wiper rotatably coupled to the first wiper junction, the wiper also having a linkage slot formed in a distal end, rejection of claim 15 is improper.

Further with respect to claim 16, the Examiner again fails to identify the claimed elements of an arcuate edge guide surface of the main PCB and a clip coupled to the wiper to bias the wiper against the first main PCB, about the arcuate edge guide surface as described in detail with respect to claim 1, herein above. *Gottl* has no arcuate guide surface and *Phillips* couples the wiper to the main PCB only via the rotating shaft 245. Because the cited references fail to disclose, teach or suggest an arcuate edge guide surface of the main PCB and a clip coupled to the wiper to bias the wiper against the first main PCB, about the arcuate edge guide surface, rejection of claim 16 and dependent claim 22 thereof is improper.

Further with respect to claim 18, the Examiner again references *Phillips* figure 13. In figure 13, both of the "main PCB" 140a and 140b plainly show a trace side facing *away* from each respective "baseplate" 610a and 610b. No disclosure, teaching or suggestion of alternative orientations appears in the cited reference. Because this orientation is contrary to the specifically claimed orientation of each of the trace sides facing the baseplate, rejection of claim 11 is improper.

Further with respect to claim 19, the Examiner again references *Phillips* figure 13. In figure 13, both of the "main PCB" 140a and 140b plainly show a trace side of each facing in the same "upward" direction. No disclosure, teaching or suggestion of alternative orientations appears in

the cited reference. Because this orientation is contrary to the specifically claimed orientation of each of the trace sides facing away from each other, that is the top one facing "up" and the bottom one facing "down", rejection of claim 19 is improper.

Further with respect to claim 20, the Examiner appears to take the position that the aperture in the coupling arm 200 through which the shaft 245 passes may be interpreted as the claim element of a linkage slot formed in a distal end of the wiper pcb. Contrary to the Examiner's specific assertion to the contrary, one skilled in the art would not understand this to be the "distal" end. As disclosed, the linkage slot 97 is at the distal end (Specification Paragraph 51, figure 2b). "Distal" is defined by Webster as "situated away from the point of attachment or origin or a central point especially of the body". The Examiner has identified the single central attachment point attaching the coupling arm to the phase shifter via the shaft 245. Therefore, this cannot be characterized as being a linkage slot at the *distal* end of the wiper. Because the cited references fail to disclose, teach or suggest a wiper rotatably coupled to the first wiper junction, the wiper also having a linkage slot formed in a distal end, rejection of claim 20 is improper.

The Examiner rejected claim 3 under 35 U.S.C. 103(a) as unpatentable by *Gottl* in view of *Phillips* and further in view of *Huynh*. The Examiner supplies *Huynh* to provide the limitation of a fifth output trace coupled to the first wiper junction. As described in detail herein above, claim 1 from which claim 3 depends, is believed to be allowable because the cited references fail to teach, disclose or suggest a clip coupled to the wiper to bias the wiper against the main PCB about an accurate edge guide surface of the main pcb. Therefore, rejection of claim 3 is improper.

Having obviated each of the Examiners rejections, applicant respectfully requests that a notice of allowance be issued. Should the Examiner be inclined to issue an Official Action other than the notice of allowance, Applicant respectfully requests that the Examiner first contact Applicant by telephone at the number listed below.

Respectfully submitted,



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/Encl: Replacement Drawing Sheets (3)

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Andrew D. Babcock